# MISTY LAKE ECOLOGICAL RESERVE

## PURPOSE STATEMENT

**March 2003**

Approved by:

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Environmental Stewardship Division

Date: March 25/03

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Date:

# MISTY LAKE ECOLOGICAL RESERVE
## Purpose Statement

Ecological reserves are areas selected to preserve representative and special natural ecosystems, plant and animal species, features and phenomena. The key goal of ecological reserves is to contribute to the maintenance of biological diversity and the protection of genetic materials. All consumptive resource uses and the use of motorized vehicles are prohibited. Research and educational activities may be carried out but only under permit.

### Primary Role

The **primary** role of Misty Lake Ecological Reserve is to preserve habitat for the endemic giant black stickleback. Located 12 kilometres northwest of Port McNeil, the ecological reserve is internationally significant as a site for the red-listed giant black stickleback. It is one of only three places in the province where both stream and lake species of stickleback are found, and these species are rated very high by the Conservation Data Centre for rarity, scarcity, and vulnerability. Research shows that the sticklebacks in Misty Lake may be a distinct species from those found on the Queen Charlotte Islands, and if this is the case, Misty Lake would have the only population of this species. The ecological reserve also protects habitat for steelhead, cutthroat trout, coho, Dolly Varden, prickly sculpin and rainbow trout.

### Secondary Role

The **secondary** role is to provide opportunities for biological research. Sticklebacks are the subject of research on natural selection as separate populations are quite distinct from each other. Research has shown that the sticklebacks within Misty Lake are phenotypically different from those in the outflow creek, which are also genetically distinct. This suggests that natural selection promotes the adaptive divergence of lake and stream stickleback but that the magnitude of divergence can be constrained by gene flow.

### Management Issues

| Known Management Issue | Response |
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| Impact of hydrocarbon and pesticide contamination from highway and rest stop, adjacent logging on water quality and hydrology of the lake, introduced species (fish and plants) potentially eliminating the giant black stickleback | ➢ Encourage Ministry of Transportation to limit the use of chemicals with respect to the management of the right-of-way and rest stop.<br>➢ Encourage the Ministry of Transportation to relocate rest area (which is excepted from the ecological reserve) to another location outside the ecological reserve.<br>➢ Develop, in conjunction with the Ministry of Transportation, a spill response to address potential spills on highway.<br>➢ Continue the review of forest development plans to ensure that forest harvesting activity does not impact water quality.<br>➢ Implement a water quality monitoring program in conjunction with researchers.<br>➢ Monitor for introduced species and lake water levels.<br>➢ Encourage more formal monitoring and recruit Volunteer Warden. |

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| Non-conforming recreation use (canoeing and illegal fishing) on lake | ➢ Develop onsite public information to introduce the ecological reserve and its natural values and appropriate uses.<br>➢ Develop information materials such as signs to indicate that removal, transfer and introduction of fish and other species is not permitted.<br>➢ Work with Conservation Officers to enforce no fishing in the ecological reserve. |

## Conservation

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| Representation<br>- ecosection | ☒ | Minimal contribution (0.3%) to the representation of the Nahwitti Lowlands Ecosection (NWL), which has only 7.6% represented in the protected areas system. However, it is significant because it is of one of only six protected areas that contribute to NWL. |
| - biogeoclimatic subzone/variant | ☐ | Insignificant contribution to the representation of the CWHvm1, which has only 7 % protected |
| Special Features | ☒ | Lake ecosystem |
| Rare/Endangered Values | ☒ | Giant black stickleback -- provincially *red-listed* (G1, S1) and nationally listed as Special Concern. *Blue-listed* cutthroat trout, Dolly Varden. |
| Scientific/Research Opportunities | ☒ | Giant black stickleback, natural selection. |

## Recreation

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| Representation | | |
| backcountry | ☐ | Not Applicable |
| destination | ☐ | Not Applicable |
| travel corridor | ☐ | Not Applicable |
| local recreation | ☐ | Not Applicable |
| Special Opportunities | ☐ | Not Applicable |
| Education/Interpretation Opportunities | ☒ | Offsite and onsite information on Giant black stickleback and natural selection |

## Cultural Heritage

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| Representation | ☐ | Values unknown |
| Special Feature | ☐ | None known at this time |

## Other Management Considerations

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| Other Designations | ☐ | Not Applicable |
| Relationship to other PAs | ☒ | Part of a system of ecological reserves on Vancouver Island and in British Columbia |
| Co-operative Management Arrangements | ☐ | Not Applicable |
| Partnerships | ☐ | Not Applicable |

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| Vulnerability | ☒ | Fish are dependent on water quality which can be affected by logging or pollution from highway. Giant black stickleback are susceptible to fluctuating water levels as they depend on littoral areas during the spawning season. Other threats include the introduction of non-game fish and beavers. |
| Relationship to other Strategies | ☒ | Established as a result of recommendations in the Vancouver Island Land Use Plan (Goal 2) |

**Area**: 55 hectares (A further 13 hectares were acquired from Western Forest Products in 2001 to be added to the ecological reserve to keep a buffer around the lake)

**Date of establishment**: April 30, 1996